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Changes in the freshwater inventory of Young Sound-Tyroler fjord system (NE Greenland): Evidence from 10 years of Greenland Ecosystem Monitoring.

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Freshwater supply to the fjord systems in NE Greenland can be expected to change as a result of climate change induced ice melt. The most obvious alteration is in that of increased freshwater supply from snow and ice melt on land. A more subtle change may also occur at the marine end as the contribution from Arctic Ocean sea ice melt and upstream freshwater discharge may alter the salinities of the inflowing marine water. Here we analyse 10 years data collected from a fjord system in NE Greenland to reveal that there although there are no systematic changes in local freshwater run off, the coastal shelf waters that flow into the fjord have doubled in freshwater content.

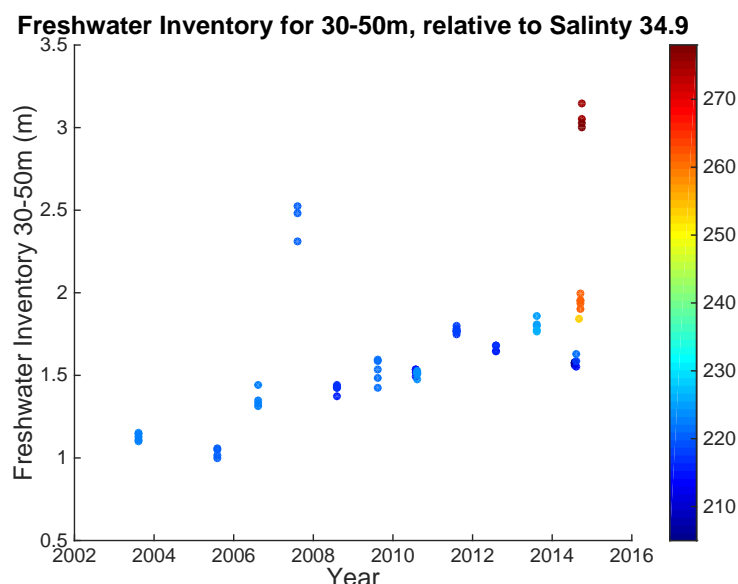


Figure: Freshwater content of coastal waters outside the fjord system at depths between 30-50 m which corresponds to the sill depth. The colour of the symbols represent the year sampled. Note in 2014 samples are from July, August September and October. All other years only August. The data points with much higher freshwater content originate from profiles with deep surface mixed layer, where local freshwater has likely been recently mixed downwards by high winds (e.g. October 2014).